




First record of the diving beetle *Copelatus chevrolati* Aubé, 1838 in Cuba (Coleoptera, Dytiscidae, Copelatinae)

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Abstract

We present the first distributional record of *Copelatus chevrolati* Aubé, 1838 from Cuba. Four specimens were collected in a light trap in August 2016 on the Isla de La Juventud. Ten species of *Copelatus* are now known from Cuba. We present a modified key to the Cuban species of *Copelatus*.

Keywords

Aquatic Coleoptera, new record, taxonomy, West Indies

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Introduction

The genus *Copelatus* Erichson, 1832 has a worldwide distribution and includes small to medium-sized species. To date, 20 species are known from the Antilles, of which 14 are apparently endemic to this area (Manuel et al. 2018). We know, furthermore, that *Copelatus caelatipennis* Chevrolat, 1863 and *C. posticatus* (Fabricius, 1801) are the most common and widespread of the Antillean *Copelatus* species (Manuel et al. 2018).

The genus *Copelatus* has been represented in Cuba by nine species: *Copelatus barbouri* Young, 1942, *C. caelatipennis*, *C. cordovai* Megna & Epler 2012, *C. cubaensis* Schaeffer, 1908, *C. danyi* Megna & Epler 2012, *C. darlingtoni* Young, 1942, *C. insolitus* Chevrolat, 1863, *C. montivagus* Young, 1942, and *C. posticatus* (Megna & Epler 2012). However, the actual number is probably somewhat higher, since the Cuban as well as Caribbean

Copelatus are largely understudied in general. Here, we report on the first record from Cuba of *Copelatus chevrolati* Aubé, 1838 (Fig. 1), a species which is widespread in the southern parts of the United States and Central and South America (Young 1963; Larson et al. 2000).

Methods

Description of form and structure, taxonomic conclusions, geographical distribution, and other findings reported in this paper are based on examination of two adult specimens deposited at the SNSB-Zoologische Staatssammlung, München, Germany (ZSM).

Images were taken with a Canon EOS R camera fitted with a 10× Mitutoyo objective (genitalia), or a MPE 65 macro lens (habitus), attached to a Stackmas-

ter (Stonemaster, <https://www.stonemaster-onlineshop.de/>) macro rail. Illumination was with three LED segments SN-1 from Stonemaster. Image stacks were generated using the Stackmaster macro rail (Stonemaster), and images were then assembled with Helicon Focus v. 4.77 software.

Geographic coordinates are given in decimal notation unless cited verbatim from labels. We also used Google Earth (<http://earth.google.com>) to locate the locality. The map in Figure 2A was made by using “Microsoft Encarta World Atlas 2000”. The map in Figure 2B is based on https://commons.wikimedia.org/wiki/File:Cuba_physical_map.svg.

Results

Copelatus chevrolati Aubé, 1838

Figures 1, 2

Copelatus chevrolati Aubé 1838: 389; Young 1963: 74; Hilsenhoff 1993: 125; Larson et al. 2000: 48; Epler 1996: 3.34, 2010: 5.45
Copelatus renovatus Guignot 1952: 170.

New record. CUBA – Isla de La Juventud • Siguanea; 21°37'08"N, 082°57'11"W; 8 m a.s.l.; 10 Aug. 2016; A. Barro leg.; light trap; DNA MB 7726, 1 ♂; DNA MB 7727, 3 ♀ (ZSM).

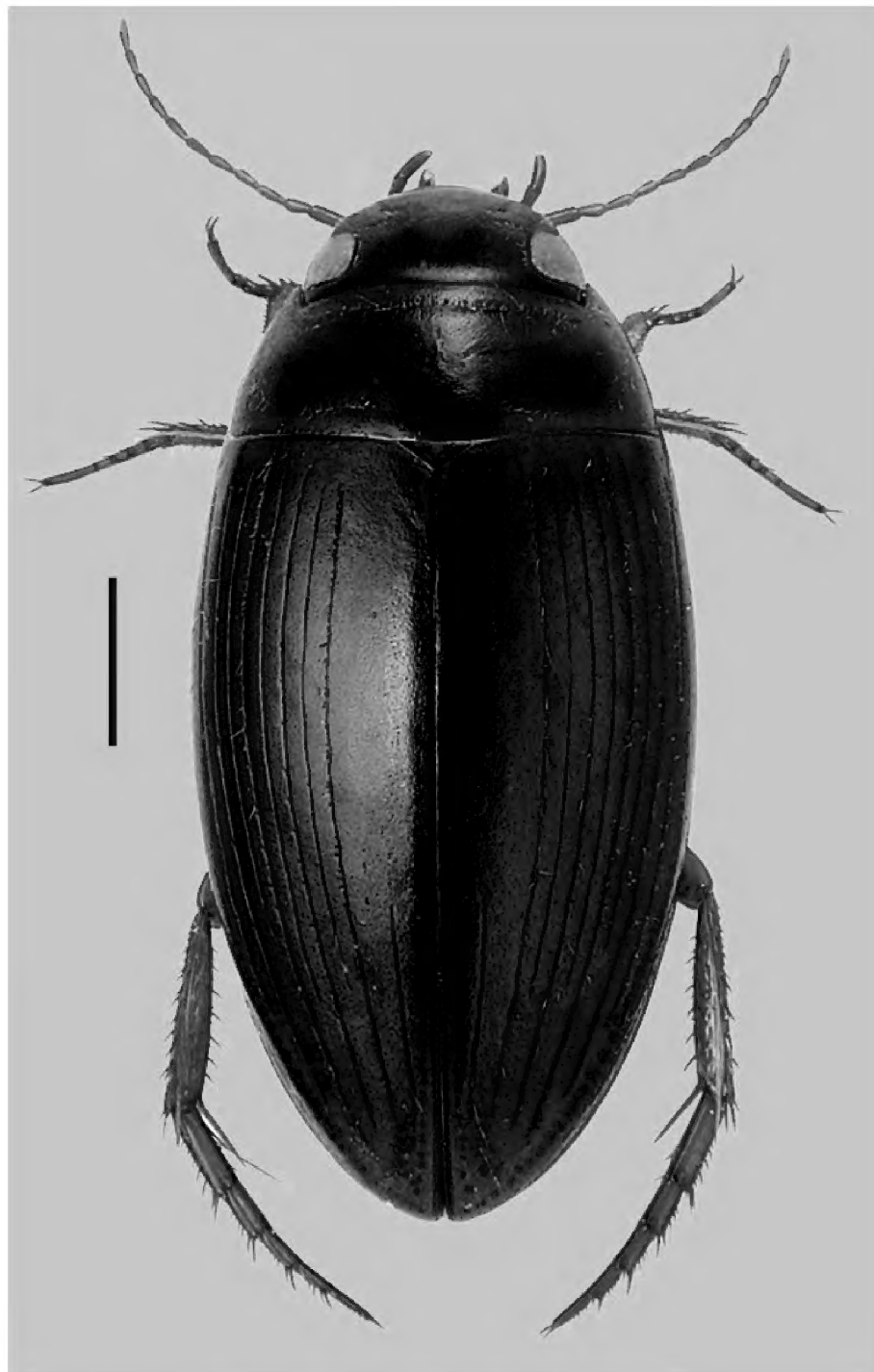


Figure 1. Habitus of *Copelatus chevrolati chevrolati*, female, from Isla de La Juventud, Cuba. Scale bar = 1.0 mm.

Distribution. So far, *C. chevrolati* was recorded from southern Canada (Ontario), most states of the USA (except the northeast) (Larson et al. 2000), northern Mexico, and in the Bahamas (Turnbow and Thomas 2008). The four specimens collected on the Isla de La Juventud in western Cuba represent the first report of this species from that country (Fig. 2).

Comments. Young (1963) recognized two subspecies of *C. chevrolati*: *C. c. chevrolati* from Wisconsin, Illinois, Texas, North- and South Carolina southwards to Mississippi, Alabama, Florida and the Bahamas, and *C. c. renovatus* (Guignot, 1952), which ranges from South Dakota, Colorado, Kansas to California, Arizona, New Mexico, Oklahoma, and south into Louisiana and northern Mexico (Larson et al. 2000). The nominate subspecies has a short subapical sutural stria on the elytron, but this stria is absent in *C. c. renovatus* (Larson et al. 2000). In some specimens of this species, recorded from southern Ontario, Canada, this stria may or may not occur, so that it is not possible to assign them to one of the subspecies. In Texas, Mississippi, Tennessee and Georgia there are also both forms recorded (Larson et al. 2000). Finally the stria is present in our specimens from Cuba, and, therefore, they belong to the nominate subspecies *C. c. chevrolati* (Fig. 1).

Identification. Adults of *Copelatus chevrolati* are recognized by the combination of the following characters: elytron with a posterolateral submarginal stria and 9 discal striae (Fig. 1), male protibia with a single shallow ventrobasal emargination, aedeagus in lateral view evenly tapering toward apex and ventrally strongly concave (Young 1963; Epler 2010).

The identification key of Megna and Epler (2012) has to be adapted as follows:

3. Each elytron with 5 or 6 discal striae 4
 - Each elytron with 8–10 discal striae 5
5. Each elytron with striae 1, 3, 5, and 9 extending to apical third; body size larger, length of body >6.0 mm; maximum width >3.0 mm
 - *C. posticatus* (Fabricius, 1801)
 - Each elytron with all striae almost complete; length <6.5 mm 6
6. Median lobe with apex similar to a bird head (*C. caelatipennis*) 7
 - Median lobe of different shape, not similar to a bird head 8
- 8 Length 5.8–6.3 mm. Each elytron with 9 discal striae, with stria 9 short near the suture and restricted to apical third (Fig. 1) *C. chevrolati* Aubé, 1838
 - Each elytron with 10 discal striae, with all striae almost complete 9
- 9 Male protibia with two ventrobasal emarginations; median lobe with outside margin abruptly expanded at midlength; parameres broad, with short setae on inner margin; female with interstrial space mostly smooth *C. cordovai* Megna & Epler, 2012

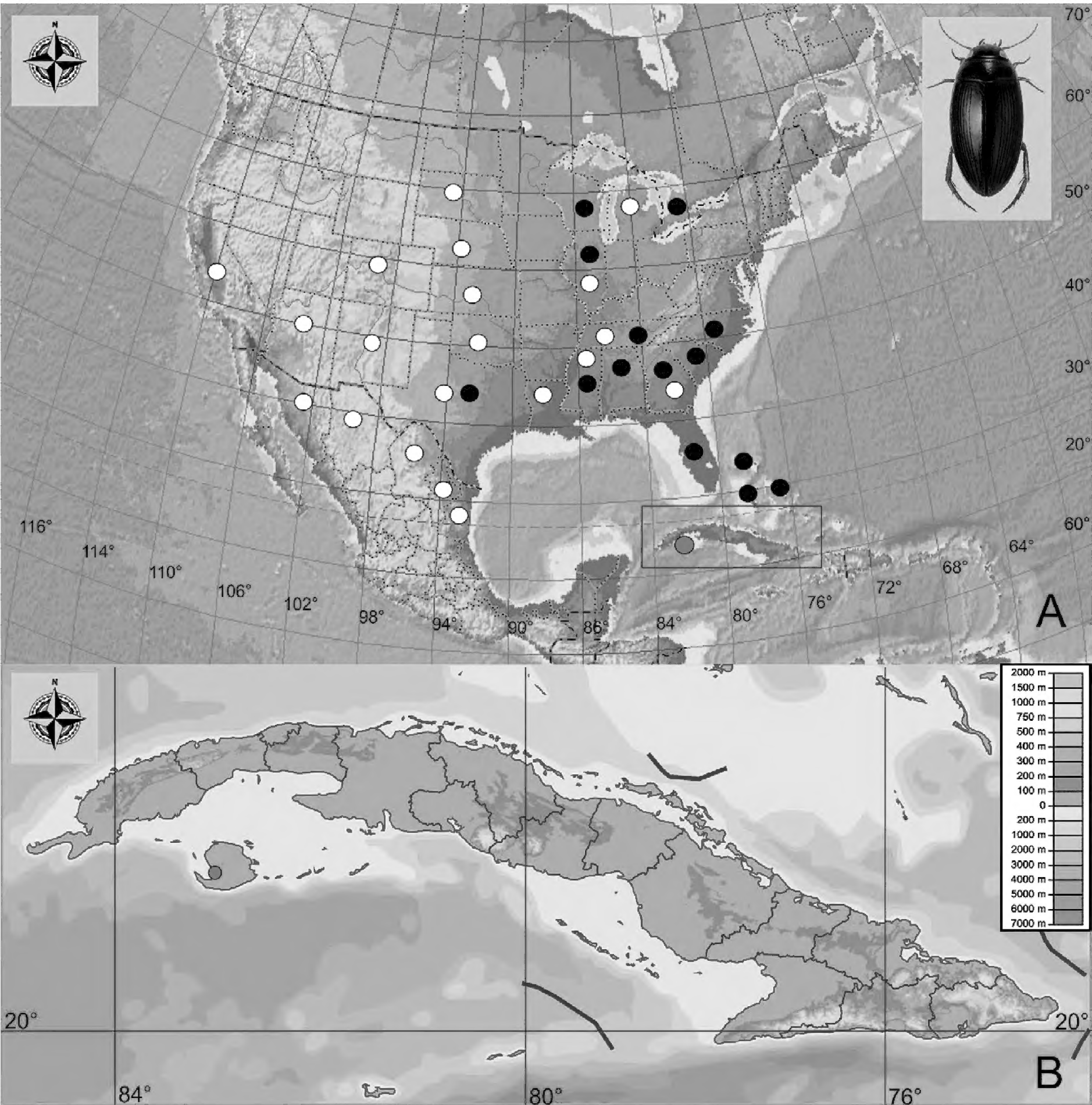


Figure 2. A. General distribution of *Copelatus chevrolati chevrolati* and *C. chevrolati renovatus* in North and Central America. The black and white dots indicate published records from states or provinces cited by Young (1963) and Larson et al. (2000). Black dot = *Copelatus c. chevrolati* and white dot = *C. c. renovatus*. **B.** The new record of *C. c. chevrolati* (red dot) in the Siguanea, Isla de La Juventud, western Cuba.

- Male protibia without emarginations ventrobasally; median lobe with inner margin strongly concave at midlength; parameres narrow, with long setae on inner margin; female with interstrial space with minute, complex striation (Fig. 9) *C. danyii* Megna & Epler, 2012

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Authors’ Contributions

Data curation: YSM. Funding acquisition: MB. Visualization: MB, LH. Writing – original draft: YSM, MB, LH. Writing – review and editing: MB, LH. Visualization: MB, LH.

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